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ON EXPLANATION

WE are sometimes presented with a statement describing some observed fact, and when we ask "Why?" we are presented with another statement which is said to constitute an "explanation" of the first. What is the relation between these two statements? What is it that constitutes the second statement an "explanation" of the first? By virtue of what does it "explain"? Though everyone is constantly uttering statements which are supposed in one way or another to explain, few persons are at all clear about what it is that makes such statements explanations.

It is sometimes assumed that when we set out to explain anything we are always trying to answer the question "Why?" But it should be evident at once that this is not the case. We offer many statements as explanations although they do not answer the question "Why?"; they sometimes explain how, or when, or who, or whither; and often when we are asked to explain some statement we merely make it clearer to the listener by stating it in other words. As the word is commonly used, any kind of clarification is likely to be called an explanation; and a statement can be clarified in many different ways.

Thus explanation covers a good deal more ground than merely answering the question "Why?"; and it might be worth while to disentangle various senses of the word "explain," showing what different kinds of questions are answered by statements which are commonly called explanations. In this paper, however, I shall be concerned only with the sense of "explain" which tries to answer the question "Why?" It may develop that to answer "Why?" also involves, or is involved in, answering the question "How?" but my present object is simply to inquire into the "Why?" I shall, moreover, restrict the field of inquiry to empirical concepts, neglecting explanations in mathematics and logic, where we would generally be said to ask for reasons rather than for explanations (although both these words are very loosely used, and overlap a good deal). My remarks will be designed not so much to add any new contribution to this issue as to analyze and correlate statements which have already been made about it. And considering the uncritical meekness with which people have accepted claims that "science has explained the universe," or, on the other hand, that

"science doesn't really explain anything," the analysis of explanation has received little enough attention.

There have been a number of statements, some overlapping and others contradictory, of what the "true nature" of explanation is. (1) Perhaps the most obvious, and certainly the oldest, is that of "explanation in terms of purpose." We have explained why an event occurred when we have stated its purpose. "Why did you walk through the snow for ten miles when you could have taken the bus?" "I wanted to win a bet." "Why does that dog scratch at the door?" "He's cold and he wants to get in." In these cases, when such answers are given, we feel quite satisfied that our question has been answered and that the phenomenon in question has been explained; and it has been explained with reference to a purpose which some sentient being(s) had in attaining a certain end. This is the most primitive conception of explanation. People like to feel that there is a purposive explanation for everything: if not in terms of human purposes, then of divine ones, or mysterious forces and powers. The impulse to explain everything in terms of purpose doubtless springs in part from an attempt to extend what holds true of some events in the human realm to all events whatever: we know what conscious motivation is like from our own experience of it, hence we "feel at home" with this kind of explanation.

But if all explanation must be in terms of purpose, then physical science can never be said to give explanations. Surely, however animistically the nature of explanation was once conceived, this is not its meaning now. To have recourse to the whims of malignant demons to explain why the watch misbehaves is surely to desert explanation altogether. Many reasons could be adduced for this, but it is enough here to state that what we want is something that will tell us why this event happened rather than that one; and, outside contexts in which human (and perhaps also animal) agencies are operative, this can not be done by appealing simply to "purpose." (An account of the nature of purposive explanations, what renders them explanations, and their place among other explanations, will appear later in this paper.)

Another account of the nature of explanation is that (2) an event is explained when it has been shown to be an instance of some kind or class of events which is already familiar to us. For example, when a person's behavior seems strange to us, we are satisfied when it is "explained" to us as being really impelled by the same sort of motives and desires—love, greed, etc.—as occur in us, and are therefore familiar to us. "Why is he introducing the man he hates to the woman he loves?" "Because he wants them to fall in love with each other" would not generally be accepted as an

explanation, for this very reason. When we observe that a balloon ascends rather than descends, unlike most objects, and it is made clear to us that air has weight and that the gas inside the balloon weighs less than an equal volume of air would weigh, we are satisfied; the phenomenon has been "explained" to us by "reducing" it to something already familiar to us in everyday experience, such as a dense object sinking in water while a hollow one floats. The event is no longer unusual, strange, or unique; it has been shown to illustrate a principle we were already acquainted with and accepted. When we want to know why gases diffuse when released into a chamber from which the air has been pumped out, the explanation offered by the kinetic theory of gases is satisfactory to us because it asserts that molecules behave *like* particles with which we are already acquainted in our everyday experience.

> Only those who have practised experimental physics, know anything by actual experience about the laws of gases; they are not things which force themselves on our attention in common life, and even those who are most familiar with them never think of them out of working hours. On the other hand, the behavior of moving solid bodies is familiar to every one; every one knows roughly what will happen when such bodies collide with each other or with a solid wall, though they may not know the exact dynamical laws involved in such reactions. In all our common life we are continually encountering moving bodies, and noticing their reactions; indeed, if the reader thinks about it, he will realize that whenever we do anything which affects the external world, or whenever we are passively affected by it, a moving body is somehow involved in the transaction. Movement is just the most familiar thing in the world; it is through motion that everything and anything happens. And so by tracing a relation between the unfamiliar changes which gases undergo when their temperature or volume is altered, and the extremely familiar changes which accompany the motions and mutual reactions of solid bodies, we are rendering the former more intelligible; we are explaining them.[1]

Professor Bridgman holds that all explanation is of this kind: "I believe that examination will show that the essence of an explanation consists in reducing a situation to elements with which we are so familiar that we accept them as a matter of course, so that our curiosity rests."[2]

One might object to this that the term "familiar" is a rather subjective one. What is familiar and every-day to us may be strange and unfamiliar to the savage; what may be familiar to you may even be unfamiliar to me. Hence some statements will be explanations for some persons and not for others. Explanation will then be a relative matter—relative to the person to whom the explaining is done. Professor Bridgman is quite willing to accept

[1] Norman Campbell, *What Is Science?*, p. 84.

[2] P. W. Bridgman, *The Logic of Modern Physics*, p. 37.

this consequence: "An explanation is not an absolute sort of thing, but what is satisfactory for one man will not be for another."[3] But there is a more serious objection: we ask for explanations not merely of phenomena that are strange and unusual. We ask for explanations of the simplest and most familiar phenomena in the world. We can ask not only why balloons rise, but why heavier-than-air objects fall. We can ask why trees grow, why our memories fail as we get old, why January is colder than July. And the principles in terms of which the scientist claims to explain these things are principles which most of us have never heard of before. Surely the fact that light blinds you as you emerge from the darkness but not after you have been in the light for a few minutes, and the fact that you can see better in darkness when you have been in it for a while, is more familiar than its explanation in terms of the contraction and expansion of the pupil of the eye. And surely the formation of rust on iron is more familiar than the chemical combination of iron with oxygen, of which most observers of iron rust have never heard.[4]

It is sometimes asserted that (3) an event is explained when it has been classed as an instance of some general law (the degree of familiarity of this law being irrelevant). A seemingly isolated phenomenon is shown to be an instance of a general law, and thus is explained. "Why are there more suicides (in proportion to the population) in New York City than in Mudville Flats?" "There are always more suicides in large cities." But surely this is no explanation. It is true that we have learned something—in this case, that the size of the city is relevant to the frequency of suicide,

[3] *Ibid.*, p. 38.

[4] We must beware, however, of a misuse of this argument. The freezing of the water-pipes in my basement in winter may be more familiar to me than the principle that water expands when it freezes, but once we have learned that water does expand when it freezes (unfamiliar though that fact may have been), the principle employed as explanation is indeed more familiar than the phenomenon we wanted explained: namely, that when things expand they "have to go some place" and in doing so can be expected to break whatever they are enclosed in. This is surely one of the most familiar facts of experience. Thus in one sense, at least, the explanation is really more familiar than the thing explained—the general phenomenon (things bursting other things when pressure is exerted) is more familiar, but not the fact that this class of phenomena (the expansion of water on freezing) is an instance of it. It is probable that many explanations are actually in terms of something more familiar although at first they may not seem to be so. On the other hand, many do not seem to be so in any sense. And, I am tempted to ask, what does it matter? Does the familiarity of a principle to some person or group really affect its value as an explanation? Many phenomena which are more familiar than others are not explanations of them; and many which are less familiar, are.

rather than, say, its longitude. Moreover, by showing that the phenomenon in question is not unique, that it is only one of many occurrences in a class, or subsumed under some law, we have taken away from most questioners the curiosity which prompted them to ask for an explanation in the first place; people most frequently (though not always, as we have seen) ask for explanations of what is bizarre or strange, and when an event has been shown not to be so ("It's just like a lot of other things") they are no longer so curious. But to have removed the impulse to ask the question is surely not to have answered it. And if people were asked whether a statement such as the one above really explained the phenomenon in question, they would very probably answer "No"; they would still know nothing about the phenomenon except that it belongs to a class of similar phenomena.

> I do not believe that laws can ever be explained by inclusion in more general laws; and I hold that, even if it were possible so to explain them, the explanation would not be that which science, developing the tendencies of common sense, demands. . . . To say that all gases expand when heated is not to explain why hydrogen expands when heated; it merely leads us to ask immediately why all gases expand. An explanation which leads immediately to another question of the same kind is no explanation at all.[5]

Let us compare the two answers given to each of the following questions:

(1) Why do the water-pipes in my basement burst in winter?

(*a*) It always happens under certain specific conditions (cold weather, a certain pressure on the pipes, etc.).

(*b*) The pipes are filled with water, which expands when it freezes, bursting the pipes.

(2) Why are there more suicides in New York City than in Mudville Flats?

(*a*) Suicides are always more prevalent in large cities.

(*b*) In large cities, conditions leading to discouragement and despair are more prevalent: loneliness, mass unemployment, poverty. . . . When people are in such situations, they more often commit suicide.

(3) Why do animals in the arctic so often have white fur?

(*a*) Many animals exhibit protective coloration.

(*b*) Those that don't have protective coloration are more easily seen against their snowy background by animals which prey on them, with the result that they are more likely to be killed by them; the white ones live to perpetuate the species and their young, in turn, have a better chance for survival; thus, the white ones multi-

[5] Norman Campbell, *What Is Science?*, pp. 79–80.

ply in increasing numbers, while the others are gradually obliterated.

We have, in the first of the two cases in each example, a simple general statement ("explanation by generalization," which I have just described); in the second, a principle or set of principles in terms of which the phenomenon can be understood. In each case we have shown the phenomenon to be an instance of a general law which is accepted as true. (These laws are not necessarily more familiar—so long as they are accepted as true, that is sufficient. In more cases than not, they are both more familiar and more general than the phenomena to be explained. But their familiarity has nothing to do with the validity of the explanation. "If they aren't familiar they should be.") How, then, does the second kind differ from the first? In that it does not simply repeat the statement in general form. Instead of saying with regard to the broken water-pipes, "This regularly happens when it is cold, etc.," we give another general law, "Water expands when it freezes," which, when we combine it with other statements, of whose truth in this case we are already aware (e.g., that when things expand they may break whatever stands in the way of their expansion), yields us a satisfying explanation of why the pipes burst. We have not simply made a statement which generalizes on the instance adduced: we have, at last, shown *why* the phenomenon occurred. Or again: it is true (as well as familiar) that animals beget other animals like them, that animals that prey on others often kill them and keep them from propagating their species, that animals are most likely to catch the animals they can most easily see, etc. These things being true, it is understandable that so many animals in a white environment are white. In this example, many such general principles are involved; but be they many or few, every explanation involves them and is made on the basis of them.

Before discussing this view of explanation further I want to mention a closely related one: namely, the notion that (4) we are said to explain the concurrence of two phenomena (the reason for whose concurrence we do not understand) when we indicate intermediate factors which provide a connection between them. For example, we may explain the high correlation between the presence of cats in a certain region and the abundance of clover there, by showing that the cats catch the mice which would otherwise eat the bees (and other insects) that are required to pollinate the clover.

It will be seen that this—"explanation by intermediary agencies"—is really a special case of explanation in terms of general principles, just discussed. The links are fitted into the chain by general principles: in this case, that cats eat mice, that bees polli-

nate clover, etc. Illustrations of the other type could equally well be made to fall under this one: we could say, for example, that we are trying to explain the correlation between sub-freezing temperature and the bursting of the water-pipes, and the principle of the expansion of water on freezing supplies us with the required connection; it is the intermediate link in the chain, so to speak, just as the predatory habits of cats and mice and the fact that bees pollinate clover are general principles constituting the intermediate links in the other chain. A large proportion of explanations are of this type: they break down gross phenomena into components which are, or are instances of, general principles which serve to explain the concurrence of these phenomena.

It is sometimes said that (5) an event is explained by reference to its *cause*. Now I do not propose here to attempt an analysis of just what the causal relation is—the volumes devoted to this subject constitute a large fraction of the entire literature of philosophy—except to say that the word "cause" is used so vaguely, and often ambiguously as well, that to say that an event is explained in terms of its cause is to substitute for a term that requires analysis one that requires analysis still more. So loosely is this weasel-word used that I feel safe in saying that every explanation is in *some* sense or other a causal explanation.

For example: When someone asks, "Why did that book fall to the floor?" he may receive such diverse answers as "Somebody accidentally dropped it" and "On account of the law of gravitation." Both of these answers may be claimed to state the *cause* of the book's falling—and yet they are manifestly answers of quite a different order. The first answer would be more likely to satisfy the average inquirer than the second. What he wants to know is the particular circumstance in this case—did someone drop it in anger, did the cat playing on the table dislodge it, etc. But he may, on the other hand, know the circumstances of the book's falling—may have seen it fall—and then when he asks why it fell he is not asking for the same sort of thing at all. He is asking for some general principle, a law, not a particular event in time. (Perhaps the timeless principle enunciated in the law of gravitation will not satisfy him, on grounds that it merely classifies the event, just as "All gases expand when heated" did not satisfy the person who asked "Why does hydrogen expand when heated?" In this case he is asking for a general principle, but not one that merely generalizes on the present instance. Sometimes no other answer is possible, however—"explanation by generalization," if this can be called explanation at all, is all that can be offered; but this will be discussed below under the heading of "brute fact.") Without doing too much violence to

Aristotle, we might call the first answer adduced the efficient cause of the event and the second, the general principle, the formal cause. In contemporary philosophical terminology the second would be unlikely to be called a cause at all.

Generally when we ask for the cause of an event we mean the efficient cause—though I shall not here try to describe an efficient cause (whether it is a necessary condition of the event, or a set of them, or a sufficient condition, or both, etc.) other than to say that it is a particular prior event or set of events. When we ask, "Why is the water in the lake frozen?" the answer we want is not "Because water freezes at 32° F." (a general law) but rather "Because the temperature dropped to below 32° F. during the night" (a particular prior event). In a case such as this we *presuppose* acquaintance with the general law that water freezes at 32° F. but want to know the efficient cause in this instance, just as in the case of the book we presuppose that objects do fall under certain circumstances and want to know the particular circumstances of the fall on this occasion.

To connect this now with the discussion of explanation: When the phenomenon requiring explanation is not a particular event but a general statement (law in its widest sense) referring to a class of events (Why do water-pipes burst in winter? etc.), then no particular event is needed by way of explanation—only general principles are involved. But when the phenomenon requiring explanation is a particular event, then the complete explanation consists not only of the general principle(s) but also of the particular antecedent(s) in this case. Thus, again: "Why did the water in the lake freeze?" "Water freezes at 32° F. (under standard conditions)" (general principle) *plus* "The temperature dropped to zero last night" (antecedent event), which together constitute an explanation of the phenomenon to be explained. But if we ask in general, "Why do lakes freeze in winter?" we are answered with the non-temporal principle that water freezes whenever the temperature reaches a certain low, which it generally does in winter in northern climates.

It should be evident here that explanation in terms of purpose is just one species of explanation in terms of general principles—or, in the case of a particular event, general principles plus particular antecedent events. If there is a satisfactory explanation, there is some general principle involved: "Why did you go to New York last night?" "There was an opera I wanted to see." Seeing the opera was the person's *purpose* in going; but there are general principles presupposed here, such as "People, in general, do what they want to do, unless prevented by some other force"—and it is only by virtue of such accepted general principles that

wanting to do a thing is considered in any way an explanation of doing it. For example, in this instance it is presupposed that the act in question is something we *can* do if we want to; with many others this is not the case. "Why did the Allies win the war?" "Because they wanted to" would not be a sufficient explanation; after all both sides wanted to; wanting to and having the physical power to are *both* requisite, and all the wanting to in the world will not alone explain its happening, any more than the desire of a paralytic to walk is sufficient to enable him to do so.

In connection with explanations of particular events, it should be pointed out here that the analysis just given applies to all "genetic" explanations. On the tidal hypothesis, for example, the fact that the largest planets in the solar system are in the middle is explained by the fact that when the passing star approached the sun, the tides raised on the sun were the largest at the star's point of closest approach; this tidal material, ejected from the sun by the star's gravitational attraction, condensed into the planets, leaving the largest in the middle where the amount of ejected material was the greatest. Many principles are involved here: the law of gravitation, Newton's laws of motion, etc. Some, indeed, such as the principle of moment of momentum, can not be rendered consistent with certain consequences of the hypothesis and thus serve to cast doubt upon the whole hypothesis. But *if* this is what happened several billion years ago and if our formulation of the laws involved is correct, then surely the present state of affairs (the position of the larger planets, and many other things) is explained, exactly as in the case of the lake freezing.

I shall now touch on a number of points which I hope will clarify certain points in the above account, and which I consider more important than the analysis of explanation itself.

(1) The laws alleged must be true ones, else there is no true explanation. If, in the cats-clover sequence, we had been told that cats eat *books* and that the books in turn eat the bees, we would never have accepted the explanation, inasmuch as these statements are false. *If* true, they would provide a connecting link, but since we are quite sure that cats do not eat books and that books do not eat bees, we would reject any alleged explanation depending on such proffered laws. As it is, we may not believe that mice eat bees; and if they do not, the whole explanation breaks down and we must cast about for another one. A chain is no stronger than its weakest link.

Sometimes explanations are offered in terms of intra-molecular states and other unobservable entities, where we can not observe

directly even a single instance of the truth of the general statement. But again the principle is the same: *if* the statements about intra-molecular states are true, they do indeed provide the explanations we are after; and if the truth of the statement is something that can not be determined for certain, then whether this explanation is true or not can not be determined either. (I do not want to become involved here in the question of whether the only *meaning* of saying that a statement, e.g., about atoms, is true is that certain phenomena—"pointer-readings"—are observable. This would be too lengthy a digression.)

The "simplicity" of explanations has been much emphasized, often at the expense of their truth. All other things being equal, I suppose, the simplest explanation is most likely to be accepted (not psychologically the simplest, i.e., the easiest to understand, but the one involving the fewest principles). But many accepted explanations are far less simple than rejected ones. The simplest explanation of the cats-clover correlation, I suppose, would be that certain effluvia released into the atmosphere in the exhalation of the cats' breath served to pollinate automatically all the clover in the region. A true explanation is often very complicated, and many alleged explanations turn out to be gross oversimplifications which overlook the actual complexity of events. Simple explanations could, I daresay, be devised for any occurrence whatever, in terms of principles which are dubious or false, like the one just mentioned. The explanation of many things remains unknown simply because of the complexities involved. This is true in submicroscopic phenomena as well: the atom can not be constructed on any such simple model as was accepted a century ago; if it is to explain the observed phenomena, it must be made bewilderingly complex, and there is much question of whether any model will suffice at all.

(2) Sometimes the explanatory principles are theories, and sometimes laws. (I have used the term "general principle" to cover both.) The relation between these two must be indicated.[6] It is usual in discussions of this kind to state that individual events are

[6] I am using the word "theory" as Campbell uses it, to denote statements involving unobservables, such as atoms and electrons. Generalizations involving only observables, such as that all crows are black and that bees pollinate clover and that ice melts at 32° F., are laws and not theories, even if some generalizations of this kind may be doubtful or even false—in this case they are false laws or dubious or alleged laws. It would be confusing to apply to these not-definitely-accepted laws the name "theories," and so confuse them with statements incapable of direct observation. Thus the statement that the hydrogen atom has one electron is a theory, but the statement that hydrogen burns is a law.

explained by laws, and that laws are explained by theories. But this is a misleading statement, to say the least. I may ask for the explanation of some individual event, such as the appearance of the aurora borealis on a certain night, and be answered with statements about electrical storms on the sun (sunspots) and streams of electrons flowing from the sun toward the earth's magnetic poles —most of which certainly comes under the head of theory, since it is not directly observable. Of course it might be objected that this is actually an explanation of why the aurora borealis occurs at any given time, and not why it appears tonight, and that thus we would still be explaining the individual event (its appearance tonight) in terms of laws (aurora occurs under certain observable conditions, e.g., involving sunspots), and the laws (specifying the conditions under which the aurora occurs) in terms of theories (about streams of electrons, etc.). But might it not be the case that there was no discoverable regularity in such an occurrence (if not in the aurora example, then in others), and hence no law under which the instance could be subsumed, and we would have to invoke theory to explain the individual event, no law being discoverable? Moreover, we have seen in the first part of this paper that when individual events are explained by laws they are not explained by laws alone but by laws *plus* antecedent events (to explain the state of the solar system at some future moment we must know not only the laws describing the behavior of bodies but also the state of the solar system at the present, or some past time). Nor is it always true that laws are explained in terms of theories. Both the explanation and the phenomenon to be explained may be laws, of which instances are directly observable. The explanation of the cats-clover correlation can be entirely in terms of other laws (not mere "explanation by generalization" such as "Cats are generally more plentiful when there's clover about" but rather statements about the predatory habits of cats and mice, etc.) and never once invoke theory; that is to say, the general principles in terms of which a law can be explained may very well be other laws, into which theory does not enter at all.

Nevertheless there is a substantial difference between laws and theories as explanations. To use an example I have used often before in this paper, we may perfectly well explain the bursting of the water-pipes on the principle of the expansion of water on freezing—a law of nature. Lest the phenomenon to be explained be taken for an individual event, we may put it in a general way: not "Why did they burst just now?" but "Why do they always do so under certain specifiable conditions (when it's cold, etc.)?" The explanation would be in terms of the expansion of water on freezing,

a physical law referring again to something perfectly observable, with no theories involved. But suppose one goes on to ask, "Why does water expand when it freezes?" Here the explanation is not in terms of any general law of which we can directly observe instances ("Most liquids do" would not be an explanation, but simply a generalization, as we have seen, even if it were true, which it isn't). The explanation generally offered, and the only *kind* of explanation I can think of, is in terms of the crystalline structure of the water molecule. This is theory; the structure of the water molecule has not been observed; but *if* we suppose it to have such a structure, we can see how water *would* expand on freezing.

(3) Perhaps the most important matter yet discussed in this paper is the extent to which explanation can be carried, and when it must stop.

To take again the case of the pipes bursting: we can explain this in terms of the expansion of water on freezing; and when we are asked in turn why this happens, then on the ordinary macroscopic level we can say nothing—"it just is that way"—although, as I have just indicated, attempts have been made to explain this in terms of the structure of the water molecule. (Whether this is actually a true explanation, and what precisely is meant by saying that it is true, I am not concerned with here. Assuming that the explanation is satisfactory, we can go on.) This only suggests the next question: "Why is the molecule constructed in this way?" Perhaps some explanation might be suggested in terms of intra-molecular or intra-atomic forces; but when an explanation of these is demanded, it seems that we can only say, "That's just the way it is, that's all." Here, it appears, explanation comes to an end; we have reached the level of "brute fact." "This is the way things are, this is how the world is constituted, and that's all we can say about it." Most persons would probably say this before such a level of analysis had been reached; they would say it is just a brute fact that water starts to expand again below 39° F.[7]

There are many phenomena which were formerly considered

[7] There is a rather elementary but widely pervasive confusion on this point. It is said that unless an explanation has been given all the way down to the level of brute fact, no explanation has really been given for the phenomenon at all; e.g., unless we know why water expands on freezing, why the water-molecule has a crystalline structure, etc., we do not really know why our pipes burst. But surely this is not the case. Whether we know why water expands on freezing or not, we do know that it does so, and that it is because of its doing so that the pipes burst in cold weather. When we have asked why the pipes burst, the principle of expansion of water does give an explanation. When we ask why water expands on freezing, we are asking *another* question. The first *has* been answered, whether we can answer the second or not.

"brute fact" which are no longer considered so. Why does this element have this color, this melting-point, these spectral lines? Why does it combine with this substance and not with that? etc. For many of these phenomena, of which formerly it was said "These are just (brute-fact) properties of this substance," explanations are now offered in terms chiefly of atomic structure and activity. But are not these explanations (assuming that they are satisfactory) brute fact? or if not, then the explanations of these? Must we not sooner or later come to a standstill in our process of explaining? [8]

At any given stage of scientific investigation, surely, there is a level of brute fact, in which the phenomena can not be explained in terms of anything more ultimate though they themselves may afford an explanation of other phenomena on a "higher" level. As has just been said, a level that was once thought to be ultimate may turn out not to be so—like layers of varnish that keep peeling off, revealing others below. But how can we be sure, at any given point, that we have come to the end, reached *the* ultimate brute fact and not just what is thought at any particular time to be so? The answer is, of course, that we never can be sure. If ever we *have* arrived, no further explanation is possible; but that we have arrived, is never certain.

It is sometimes said that people who keep asking Why? Why? even with regard to what we now consider brute fact, are asking meaningless questions. It might be observed, however, that if such questions had not been asked in the past, we would not have reached such "deep" levels of explanation as we now have; and the progress of science depends in large measure on the fruitfulness of explanatory hypotheses. Moreover, I suggest that the question has meaning when we have some definite conception of a more ultimate structure in terms of which the structure now considered brute fact can be explained, even if such a conception be highly tenuous and hypothetical, e.g., if we know what kind of structure *would* explain the behavior of the electrons, etc., just as the present electron-proton

[8] I am tempted to remark here that there has been much unjust criticism of the Humian doctrine of causation because the process of analysis is not carried far enough. Thus, in cases of death by arsenic poisoning, he would be no more content than would a physician to say that there was simply a constant conjunction and no connection (between arsenic and death); he would analyze it down further, to the action of this substance on the stomach, etc. To deny this is to reduce Hume's view of causation to an absurdity. But ultimately, having performed such a detailed analysis, do we not come to a series of brute-fact "constant conjunctions"? (One might say: Yes, if you like, there are connections, but those connections consist of a lot of constant conjunctions.) This, however, is too large a topic for me to explore any further here.

hypothesis explains the failure of certain elements to combine with others. Explanation is always in terms of something else, and there can be no explanation (to request one is to make a demand logically impossible of fulfillment) if there is nothing even hypothecated in terms of which to make it. But once such a hypothesis has been conceived, our answers in terms of it will make sense even though they may not be true and even though it may seem unlikely that we shall ever know whether they are.[9]

There are many realms in which explanation, at the present stage of inquiry, comes to an end long before the molecular or submolecular level is reached. This is particularly true in cases dealing with biological behavior. And perhaps biological phenomena—some of them at any rate—are inherently incapable of explanation in this way; does not the controversy between vitalism and mechanism (in at least one of the many meanings of those much-abused terms) involve precisely this issue?

Nor do I want to leave the impression that all explanation must be in terms of the more minute. This is not even true in physics. As Bridgman says, speaking of the "elements" in terms of which an event or law is explained,

> There is no implication that the "element" is either a smaller or a larger scale thing than the phenomenon being explained; thus we may explain the properties of a gas in terms of its constituent molecules, or perhaps some day we shall become so familiar with the idea of a non-Euclidean space that we shall *explain* (instead of describe) the gravitational attraction of a stone by the earth in terms of a space-time curvature imposed by all the rest of the matter in the universe.[10]

The terms which we apply in trying to explain phenomena make it seem as if explanations are being given, while actually in many cases the terms are simply names for the phenomena themselves, or the class into which they fall, and nothing more. When someone asks, "Why do stones fall?" and the "explanation" is given, "All heavier-than-air objects tend to fall," it is clear at once that one is simply generalizing on an individual case—"explanation by generalization" which we have already seen to be unsatisfactory. But it is not so clear to most people that the answer "Because of the law of universal gravitation" is of exactly the same kind as the first one. The classifi-

[9] Cf. Bridgman, *op. cit.*, p. 39: "Formally, there is no limit to the process of explanation, because we can always ask what is the explanation of the elements in terms of which we have given the last explanation. But the point of view of operations shows that this is a mere formalism which ends only in meaningless jargon, for we soon arrive at the limit of our experimental knowledge, and beyond this the operations involved in the concepts of our explanations become impossible and the concepts become meaningless."

[10] *Ibid.*, p. 38.

cation has been extended—the behavior of the stone is now of a kind in which all objects in the universe partake, not merely terrestrial ones—but neither statement does more than classify the present phenomenon. It has been classified but not explained. Appeals to gravitation are just ways of saying that all bodies behave in a certain manner, and this mode of behavior is entitled "gravitational attraction." We are not explaining the fall of bodies as we did the bursting of the pipes or the comparative abundance of white animals in arctic regions.

To make this quite clear let us compare it with another instance.

> All plants, so far as is known, I believe, *start* upwards as regards their stems, however these may begin soon afterwards in some cases to creep. And they all equally start downwards as regards their roots, whatever direction these may subsequently take. When we enquire as to the cause of this tendency, . . . the scientific man does not attempt here to interpose a technical term like "gravitation"; in fact, owing to the novelty of the enquiry he is not provided with such a term as yet. Had the particular question been raised a couple of centuries ago, the difficulty would probably have been smoothed away by the introduction of a well-selected expression, on the analogy of "plastic form" or "vital force." But this resource is not available, and consequently to the semi-scientific, who are greatly influenced by the appropriate introduction of a term, it often seems in such a case as if some admission were being made as to the inferior position which we occupy.[11]

To have given a name, however impressive it may be, is not to have given an explanation.

There seems to be one kind of case in which the brute-fact level is reached at once and bids fair to remain so: I mean the correlation of certain mental states with certain physical states. We can often explain physical phenomena in terms of other physical phenomena, as has been done constantly in this essay; but what can we do in the case of mental phenomena except note that certain of them seem to be uniquely correlated with certain physical states? *Why* do I have a certain color-sensation, which I call red, when light-waves of a certain frequency strike the retina of my eyes, and another and indescribably different sensation, which I call yellow, when rays of another frequency strike the retina? That this frequency is correlated with this unique experience, and that one with that experience, seems to be sheer brute fact, which no amount of information about physics and physiology alone could have enabled us to predict. Or, again, is it not just an ultimate brute fact that this peculiar and unique taste-sensation occurs when salt is in contact with my palate, and another when the substance is cinnamon?

But is not the salty taste of a certain food explained when we discover that one of its chief ingredients is salt? Yes, indirectly:

[11] John Venn, *Empirical Logic*, pp. 502–503.

I mean that *if* one grants the brute fact that this substance is correlated with this kind of sensation, then the occurrence of the salty taste in this dish is explained by the presence of salt in it; but that this taste is correlated with the presence of this substance, is still brute fact. (When we are ill the dish may not taste salty; but this shows only that the presence of salt is not the whole physical state; many other things enter into the picture as well; but the *whole* complex—or, some would say, the brain-event which is the end-product of a whole series of states in the brain, nerves, sense-organs, and external world—is what is, as a matter of brute fact, correlated with this particular sensation.) If we know that a physical state x is correlated with mental state x', the production or removal of that mental state can be explained indirectly in terms of the production or removal of the physical state x by means of agencies (in this case chemical) *a, b,* etc. Thus it is the physical state in each case that is explained, and the brute-fact character of the mind-matter correlation remains.

One further point should be made before leaving this subject. There are many cases in which the question "Why?" is asked and no answer is forthcoming. It may be that there is an explanation but we do not yet know what it is: for example, we do not as yet know why potassium thiocyanate relieves certain types of migraine, although we shall probably come to know this in the future. If, on the other hand, we are at the brute-fact level, then by definition we can no longer meaningfully ask for further explanations. Of course, as we have seen, we can not be sure at any given stage whether this level has been reached (with the possible exception, just noted, of the correlation of mental states with physical ones); it might be described as the theoretical limit of our investigations; and physical science can always keep on speculating and investigating the possibility of further explanations. But there are other cases in which the question "Why?" is asked, and the inquirer has no notion what he is really asking for. The child asks, "Why is Mummy sick?" and on being given a lengthy physical description of germs attacking certain blood-corpuscles which are necessary to the maintenance of health because they perform certain essential functions in the body, etc., the child, even if he understands the physical explanation, may still ask, "But *why* is she sick?" What is the child asking for? Perhaps he is asking for an explanation in terms of purpose (and might then be satisfied with "God willed it so" or even "Some evil spirit wanted to torture her") just as he receives an answer in terms of purpose to questions such as "Why did Daddy go to Chicago?" (I daresay that most of the first explanations a child receives are in terms of purpose, and he may as-

sume that all others will be in those same terms.) It is notorious that uneducated persons as well as children demand explanations in such terms when none is in order. But on the other hand the child may have no idea what he is asking and may simply feel a general dissatisfaction which he voices by repeating the question "Why?" So too may the man in the street and the philosopher when they ask (respectively) "Why is life like that?" and "Why are there sense-data?"—little realizing that they have removed the very possibility of an answer by the very nature of the question—or group of words in the form of a question.

In such cases the word "why" simply becomes an "expectation-formula"; having received answers to questions beginning with "why" when these questions were meaningful and explanations could be given, they continue to use the word "why" even when they do not know what it means in this case, and really do not know what they are asking for. One need not be surprised that no answer is forthcoming to such questions. We are all too prone to terminate an exasperating series of questions beginning with "why" with a remark such as "That's just something we don't know," as if it were like the cases where something definite is being asked but we do not yet happen to know the principles which explain the phenomena we are asking about. If something in the case is not known, there must be something in the case which we could fail to know. If we are to ask a meaningful question, we must know what it is that we are asking for; only then can we recognize an answer as being one when we do find it. And if no statement, even if true, would satisfy as an answer, what does the question itself mean?

(4) Closely related to this is the contention that science actually explains nothing, but only describes. "Science doesn't tell us *why* things happen," the complaint runs, "it only tells us *how* things happen." Now I confess that the exact intention of the user of the question beginning with "why" is often not very clear—as we have just seen. In the way in which the term is commonly used, science *does* explain; once again, the bursting of the pipes, the formation of ice at the top of ponds rather than at the bottom, and many other phenomena, are explained by reference to the principle of the expansion of water on freezing. The phenomenon is now understandable to us, we see why it occurs as it does, and we say it has been explained. (If someone says we have *not* explained why the pipes burst, then what does he mean by "why"? What sort of thing is it that he is asking? What *would* answer his question? Let him state in other terms what it is that he wants to know.)

"But is not explanation after all merely description?" I have no objection to saying that when we explain something we actually describe, but this does not preclude the fact that we *are* explaining. When the question is asked why pressing the button turns on the light, we explain the phenomenon by describing just what (we believe) goes on—currents, closed and open circuits, conduction of electricity, dynamos in the power plant, etc. But have we not in so doing explained the phenomenon? We have explained *by* describing, if you will—by stating the principles which describe these states-of-affairs; but certainly we have explained. To deny this would be like saying that because an object is red it can not also be colored.

(5) In any given case the explanation that will satisfy us depends on our intent in asking the question. We may be interested in only one aspect of a phenomenon, and yet, roughly speaking, say that we have found "the explanation" whereas others, looking for something else, but asking the same question, may find "the explanation" to be quite different. Each of them is looking for some item in the total explanatory scheme, which in the case of human affairs is often bewilderingly complex. Why did the man steal the money out of that safe? "He picked the lock," says the detective; "He knew that the Madame was out," says the maid; "We needed the money," states his wife; "Look at his background," says the sociologist, "and you'll discover why." These explanations do not exclude each other, but rather complete and supplement each other. In these cases we should speak not of *the* true explanation, but of *a* true explanation; or, more precisely still, a part or aspect of the complete explanation.

In this connection it is in point once again to allude to explanation in terms of purpose. What can be explained in terms of purpose can also be explained—in a different dimension, so to speak—on other levels. Whether the explanation satisfies depends on what the inquirer was asking for. "Why did he go downtown?" "Well, in response to impulses from certain centers in his brain, some muscles in his arms and legs started moving and . . . ." "No, that's not what I mean. I mean, why did he go? what purpose did he have in view?" "Oh—he wanted to buy a new suit." Contrast this with the following: "Why did he die?" "Well, a bullet entered his lung, puncturing some blood vessels, and the blood filled his lung so that he couldn't breathe any more, and. . . ." "No, that's not what I mean. I mean *why* did he die?" But here we can give no answer in terms of conscious purpose. (We could answer in terms of purpose in *another* sense, e.g., what purpose did

it serve? How was the world benefited by his death?[12]) The inquirer here is assuming that just as the conscious purpose of some individual resulted in that individual's going downtown, so also the conscious will of some superhuman individual, presumably God, resulted in the death by shooting of the person in the second example. But unless we introduce *ad hoc* such an agency into the scene, the question in the second case is not in order (of the philosophical difficulties entailed by such an introduction I shall here say nothing), but merely derives its appearance of reasonableness from an analogy with cases like the former. Explanation in terms of purpose works only where there *is* a conscious agent purposing to do this or that; purposive explanations are out of order in cases where inanimate objects (and all others incapable of sensation and volition) alone enter into the picture, i.e., where there is nobody to have the purpose.

(6) Scientific explanation has been viewed with fear or abhorrence in some circles because it was believed that explaining meant "explaining away." The precise meaning of this latter term I have never been able to discover. Surely explanation deprives us of no facts we had before. To "explain color" in terms of light-waves is not, of course (as should have been obvious), to take away the fact of color-sensations. "Thinking is nothing but the occurence of certain neural impulses" should be changed into "*When* thinking takes place (and it is just as incontrovertible a fact as the neurons are), there are neural impulses." To "explain away" someone's politically reactionary tendencies by saying "He's old, and people get over-conservative when they get old" does not for a moment impugn whatever truth the person's opinions may have. The same reasoning could undermine his opponent's assertions: "You needn't pay any attention to that young upstart, they're all hot communists when they're young." Reference to biography may explain why a person held a certain belief at a certain time, but the truth or falsity of the belief is utterly unaffected by this and is tested on different grounds entirely. The idea that reference to a person's mental or physical condition could "explain away" the truth of any belief is one of the most flagrant blunders of the materialistically-inclined laity of our day.

In this paper I have tried (1) to analyze the nature of explanation, particularly in the natural sciences, and (2) to clarify several related questions, such as the ultimacy of explanations, laws and theories as explanations, and the relation of explanation to descrip-

[12] Cf. the three senses of "purpose" given by Woodger in *Biological Principles*, pp. 432–434.

tion. There are many other related topics, such as that of *ad hoc* explanations and the predictive value of explanations, which would require far too lengthy a treatment for a single essay, and which, moreover, are much more usual problems for discussion in current philosophy, having been amply discussed in a number of textbooks and articles in periodicals.

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COMMENTS AND CRITICISM

COMMENTS ON PROFESSOR A. E. MURPHY'S *The Uses of Reason*

The purpose of this brief paper is to examine a certain aspect of the doctrines developed in Professor Murphy's *The Uses of Reason*,[1] and to raise the question: How much reason has Professor Murphy introduced into ethical evaluation? My answer, in general, will be: not much. Let us inquire into the terms "rational" and "irrational" as they are applied by Professor Murphy to the situation in which practical reason operates. The good is the "satisfaction of . . . interests," or more accurately, "an *order* of satisfactions" (p. 125). These desires, wants, and interests are, on Professor Murphy's statement, not antecedently rational (p. 106). These factors can become rational only when we view them as means to the realization of "an order of satisfactions." "Those interests which can contribute to such a good are said to be reasonable with respect to it, those that oppose it, irrational" (p. 109). Also, "while no interest is antecedently rational, and while reason has no criterion for the good outside that which the satisfaction of human wants itself determines, the satisfaction of our wants can come to be a rational process in so far as we judge the claims of each particular interest from the standpoint of an attainable harmony to which each contributes but in which none has exclusive and unqualified authority" (pp. 106–107).

Now, I submit that such a view is, on the surface, puzzling. Until the interests, etc., are harmoniously related to an end, an order of satisfactions, they are not rational. Yet, on the other hand, we are told that "reason has no criterion for the good outside that which the satisfaction of human wants itself determines." Let us, however, in fairness to Professor Murphy, attempt to make these contentions meaningful. What these statements seem to signify is this. Interests, etc., unrelated to an end, a satisfaction, are not

[1] New York, The Macmillan Company, 1943.

rational; this appears to be what Professor Murphy means when he speaks of them as antecedently non-rational. On the other hand, when interests, etc., are related to a satisfaction in such a way that they are not opposed to it, but efficacious in its realization, then they are rational. This is so far intelligible and unobjectionable.

Let us now inquire, however, into what Professor Murphy means when he asserts that "reason has no criterion for the good outside that which the satisfaction of human wants itself determines." If we restate this in a slightly different form, it will be clearer what is involved here. That is, Professor Murphy is saying that reason has no criterion for the good outside that which the satisfaction determines. It is, then, obviously, the *satisfaction* that is the ultimate reference, and interests become rational when they are harmoniously related to it. But is the satisfaction rational? The answer to this question must be in the negative; the satisfaction is a necessary and prior condition of rationality but is itself non-rational.

It is clear, therefore, that when Professor Murphy writes about a "reasonable satisfaction," as he does, he is contradicting himself, for a satisfaction is the ultimate reference and is non-rational. Practical reason enters in only when the interests are harmonized in such a way as to be efficacious in realizing this end.

Professor Murphy is saying something, unfortunately, but certainly, that will bring warmth to the hearts of the anti-intellectualists, against whom he is presumably contending. For he is obviously saying that practical reason is a subordinate process that is simply instrumental, along with other factors, to the realization of non-rational ends. If this is the place that practical reason has in human conduct, it is certainly a disappointing one. Those who looked to Professor Murphy for the rescue of reason must feel concerned, for practical reason turns out to be merely the servant of the non-rational.

It is obvious also that Professor Murphy's identification of "reasonable satisfaction" with "good" is completely arbitrary, for it is inconsistent for him, as was noted, to speak of a *reasonable* satisfaction. Professor Murphy tacitly admits this by failing to point out what an *unreasonable* satisfaction would be. And, to say that what is desired is what is good, i.e., desirable, as the author does, is to infer a value-conclusion from a descriptive fact. Why should any and all non-rational satisfactions be identified with the good? Is the satisfaction "good," or a good, when "the beast of Belsen" is satisfied by observing the efficiency of his crematory?

Some of the above criticisms are, perhaps, more or less minor ones. A more serious difficulty arises when practical reason is

examined more carefully. We recall that Professor Murphy affirmed that practical reason is more than reason in the "narrow sense," that value judgments were beyond its scope. It is more than "the tracing out of the implicative relations of ideas, and causal inferences concerning matters of fact" (p. 97). But is it? I do not see that Professor Murphy has made out a case for this "more." Actually, as we have noted, the only place in which practical reason supposedly functions is in relating interests harmoniously in such a fashion that they will not oppose, but rather enhance, the realization of the satisfaction. But this is a matter of causal efficacy; it is a matter of selecting those interests that will be efficacious in bringing about the satisfaction. And, we may admit, for the sake of argument, that the "formal" function of reason in the "narrow" sense may also have a part in this process of harmonizing interests. But where is anything further needed? As indicated, it is not reason that determines the ends, the satisfactions, for these are non-rational. Practical reason thus collapses to reason in the "narrow" sense and is no different from it; that it is applied to interests and their harmonization does not change its basic character any more than reason in the "narrow" sense has its character altered when it is applied first in physics and then in biology.

But there is more to Professor Murphy's theory of practical reason, and a conclusion should not be drawn too hastily. As he writes (p. 111): ". . . there is more to practical reason than that. It is not sufficient to talk of a harmony of interests and a resulting satisfaction. We must go on to ask whose interests are to be harmonized and from what standpoint, and on what level the satisfaction is to be achieved" (p. 111). On this problem, Professor Murphy admits that "the only interests a man can reasonably be concerned about are his own" (p. 112). But he adds that it is also true that man "can reasonably be concerned about the interests of others and the claim they make upon him, and can prefer such claims to interests which, if he had only himself to consider, he would have preferred to satisfy" (p. 112).

These "social" interests are defined by established and approved ways of acting. As Professor Murphy writes: "The object of this concern will, as a rule, be defined by certain approved ways of acting, acknowledged as 'right,' 'fair,' or 'proper,' and felt by the individual to stand as obligations which he is bound to respect in his relations to other people. The keeping of promises, support for aged parents and young children, loyalty to the state and readiness to defend it . . . are familiar instances, and there is no society with which we are acquainted . . . in which respect for some such obligations is not a considerable factor in social behavior" (pp.

113–114). He adds that "These rules and obligations are not themselves the product of human reason, save to a minor and limited degree" (p. 114). And, they include taboos that we now regard as cruel and stupid (p. 114).

These moral rules have the function of causing men to ask "not merely what, on reflection, they want to do, but also, in some instances, what they ought to do" (p. 115). Or, as Professor Murphy puts it, too, men will not know what they *want* to do, until they have found out what they ought to do (p. 115). "For they want to do what they ought to do, and this is something to be found out, not dictated in advance by the *de facto* urgency of competing interests" (p. 115).

Now, I submit that this qualification upon Professor Murphy's thesis is hardly an addition that enhances his defense of reason. On the contrary, it frankly admits that the "ought-element," the obligatory feature of human conduct, is to be found in these conventions which are sometimes cruel and stupid and, at best, involve human reason only to a minor and limited degree. This is a surprising admission in the light of Professor Murphy's professed defense of reason, for we now find ourselves not only slaves to non-rational satisfactions but to irrational convention.

It becomes clear, now, too, in the light of this qualification, that the "harmony" of interests is not the rationally impartial affair the author earlier described it to be; at best, it can be reasonable—ignoring earlier comments—only in so far as it is not interfered with by the imperatives, often irrational, rooted in convention. Man can "rightly prefer 'his own' interests to others only when and in so far as they are entitled to such preference under rules held to be valid not merely for him, but for all those concerned in the moral community" (p. 115). But these rules, as was noted, are often cruel and stupid, and are not the products of reason, save to a minor and limited degree. This hardly looks like the miraculous rescue of reason from the bloody hands of the anti-intellectualists; in fact, it is nothing more than Bergson's "closed morality" and Bergson is not the greatest defender of reason that philosophy has seen.

A still further qualification of Professor Murphy's earlier doctrine is imposed, to which attention can now be directed. It is at this point that Professor Murphy turns to "the level" (p. 116) of the satisfaction. That is, the question is raised here whether there is any difference between the satisfaction of a fool and Socrates. As Professor Murphy says: "The answer depends, of course, on the value to be placed on the man who is having the satisfaction . . ." (p. 116). It is only when "we are concerned not merely with the

satisfaction of interests, but of persons, . . . and what worth they are capable of possessing, that we can rightly estimate their value" (p. 116). Here, at this place, one might reasonably expect some light on "grades" or "levels" of satisfactions, and if this light were forthcoming, it would negate an earlier criticism to the effect that Professor Murphy offers no grounds for identifying satisfactions with goods. Here, one might hope for a principle by means of which we could evaluate the worth of satisfactions, but we are only told that it is a matter of "the value to be placed on the man who is having the satisfaction." But, as to who is competent to place this value on the person is left in doubt. In fact, Professor Murphy sides with Socrates rather than the fool, as did John S. Mill in a slightly different illustration. Yet who is to evaluate the person of Socrates? Is it the Athenians who condemned him to death, or Plato, or a modern historian of philosophy? Indeed, Professor Murphy chooses a very unfortunate example, so far as his theory is concerned. For, in my opinion, he should have sided with the fool, at least if the fool is a well-behaved and conventional sort of person. The fool would be following out "the rules." Certainly Socrates did not, as is attested by the manner of his death; Socrates ignored the "oughts" of his moral community to the extent, at least, that his fellow-Athenians killed him.

Yet most of us, I presume, would agree that Socrates was the source of moral progress, whereas the fool, in his conventionality, was not. Professor Murphy apparently wishes to confine us to the "closed" morality, and we are to follow our desires only in so far as the "oughts" of this "closed" society permit. This is a deadening theory and implies a static social and moral situation. I submit that Professor Murphy's doctrine does not strike one as acceptable or as one which, in its operation, places reason in a very significant place. Reason has not been placed back on its high pinnacle by Professor Murphy; it has been subordinated to nonrational satisfactions and rules.

We now have Professor Murphy's theory before us. Let us further test its adequacy by judging it in the light of what he himself says about "theories." "Their function," he tells us, "is to extend and deepen the range of significant experience by showing us what to look for and what is significant in situations where mere gaping and pointing would quite certainly have missed the point, and where action without a grasp of relevant and salient factors is bound to be shortsighted and confused" (p. 136).

In the light of the foregoing exposition and criticism of Professor Murphy's views, I do not see that his theory performs the function he assigns to theories. It offers no valuable insights, no

visions that spring from a "dynamic" morality, and as a matter of fact, upholds subservience to the *status quo,* e.g., being willing to defend one's country, etc. In my opinion, the *status quo* is not exactly the most beautiful thing in the world to contemplate. Whether, therefore, we should deny Professor Murphy's doctrines the status of a "theory," on his own account of what the function of a theory is, concerns only the application of words and is thus unimportant. That his theory is inadequate to the demands of a rational ethics is important and this, unless I am mistaken, has been demonstrated. And, I must conclude, as much as I should like to conclude otherwise, by saying that if this is the best case that can be made for reason in the sphere of human conduct, the anti-intellectualists may have a point at that.

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BOOK NOTE

Man and Society: The Scottish Inquiry of the Eighteenth Century. GLADYS BRYSON. Princeton, New Jersey: Princeton University Press. 1945. ix + 287 pp. $3.00.

This volume makes an admirable beginning for the interpretation of the philosophy of the Scottish Enlightenment. It is concerned with moral philosophy as it was cultivated by a group of philosophers who had personal contact with each other and who engaged in a friendly exchange of criticism on issues which were central for their work as individuals, for their group discussions, and for their times in general. These men were Francis Hutcheson, David Hume, Adam Smith, Adam Ferguson, Thomas Reid, Dugald Stewart, Lord Kames, and Lord Monboddo—a more distinguished and entertaining group could hardly be imagined. Hutcheson set the general pattern for the lectures and writings of this group and provided a systematic, comprehensive framework of moral philosophy within which their thinking took its course. It is, therefore, relatively easy for the historian, as it was for them, to notice their agreements and differences; there was in this group a genuine meeting of minds.

Professor Bryson defines their central objective as the exploration of human experience in the interests of constructing an empirical science of man. She wisely selects Adam Ferguson as the central and typical figure in this group, and gives us an exposition of the way in which he conceived and worked out this enterprise. The method adopted involved a double observation, a looking within

the mind and a looking out into the history or progress of human conduct; these two types of empiricism, though they soon became hostile to each other, were cultivated by this group as supplementary. The author outlines in succession their applications of this method to natural history, human history, human nature, social evolution, and social institutions (family, education, law and government, political economy, religion, and language). The volume is thus beautifully constructed and, on the whole, the exposition does justice to the subject.

Two figures emerge from this group as unrepresentative. Lord Monboddo was a conservative, Calvinist critic of the group, who used their methods partly in satire, partly in *reductio ad absurdum* in order to bolster his conviction that the Enlightenment would be futile in the end. Unfortunately his Calvinist background and principles are not given adequate exposition in this volume and he is represented as an essentially negative, sour, "crotchety" critic, who despite his learning had no constructive or systematic philosophy and whose chief delight in life was to contradict Lord Kames. Even so, he is a most engaging figure and a more complete account of him will be awaited eagerly by every reader of this volume. The other figure is Thomas Reid, who was the only one of the group without a genuine historical interest and who emphasized "inductive" introspection to such an extent that it ruined his empiricism.

It seems to me that the chief weakness in this volume centers about the place assigned to Reid and his followers in the Scottish Enlightenment. Professor Bryson attempts vaguely to link the theory of moral sense with the theory of common sense as two aspects of the same basic empirical philosophy, and suggests that their divergence came at the end, not at the beginning, of the Scottish school. But Reid might more accurately be presented as the founder of a rival school. There were really two Scottish schools: the Edinburgh-Glasgow school, represented by the group here described plus Thomas Brown, the last major figure in the Scottish Enlightenment, who should, it seems to me, have been substituted for Reid in this volume, and the Aberdeen School, founded by Reid and devoted to "common sense," more or less by way of criticism of the critical empiricism of the other school. It is true that Reid, because of his years at Glasgow, was a connecting link between the two schools, but his basic *Inquiry* was worked out at Aberdeen and remained in significant contrast to the works of Hume, Smith, and Ferguson. Certainly it is misleading to represent Thomas Brown as "bringing to a close" the work of Reid and his school (p. 145).

Two themes which the author suggests are important and de-

serve fuller treatment than she gave them. "They all wanted to break away from Cartesian rationalism, with its emphasis on abstract intellectualism and innate ideas; . . . they wished to emphasize the fact that man is a sensitive being" (pp. 145–146). If the opposition to the Cartesians on the one hand and the Calvinists on the other had been given more prominence in this exposition, the central significance of the movement might have emerged more clearly. The other point deserving more attention is the great concern of this group for the philosophy of language. It was not idle "curiosity" that led Adam Smith, Adam Ferguson, and Lord Kames to make elaborate inquiries into the origin and development of language. Monboddo was voicing the conviction of them all when he wrote, "Language is the foundation of all the improvement we can make of our mind in this life and it must have been invented before any other art" (p. 97). A philosophy of progress which was intended to take the place of the Christian mythology of fall and redemption was bound to emphasize the natural resources of man for his gradual "regeneration" from savagery to civilization; language, the chief of these resources, was to this group the substitute for the grace of God. The central importance given to it among human institutions by these writers suggests that Professor Bryson might well have given it a whole chapter or at least a detailed critique similar to her excellent expositions of the criticism of social contract theory, natural law, and political economy. Jurisprudence, too, might well have been emphasized more, since it formed one of the major branches of Scottish moral philosophy.

H. W. S.

NOTES AND NEWS

The newly elected officers of the Western Division of the American Philosophical Association are as follows: President, Marten ten Hoor; Vice-President, L. P. Chambers; Secretary-Treasurer, George R. Geiger; executive committee members: George Gentry, Willis Moore, Howard D. Roelofs.

To the Editors of the Journal of Philosophy:

Professor Dewey's letter in this Journal (Vol. XLIII, 1946, p. 280) is put in a form which necessitates a reply. I am asked to show that pragmatists have restricted the term "pragmatism" to my use of "pragmatics," or else to admit that I am attempting to "correct" pragmatism. Neither alternative is, however, true, since in my terminology "pragmatics" was never equated with "pragmatism." Dewey's challenge rests on a verbal misunderstanding.

His discussion was based solely on my *Foundations of the Theory of Signs*. It is therefore sufficient to quote the following passage from pages 29 and 30 of that monograph:

> The term "pragmatics" has obviously been coined with reference to the term "pragmatism." It is a plausible view that the permanent significance of pragmatism lies in the fact that it has directed attention more closely to the relation of signs to their users than had previously been done and has assessed more profoundly than ever before the relevance of this relation in understanding intellectual activities. The term "pragmatics" helps to signalize the significance of the achievements of Peirce, James, Dewey, and Mead within the field of semiotic. At the same time, "pragmatics" as a specifically semiotical term must receive its own formulation. By "pragmatics" is designated the science of the relation of signs to their interpreters. "Pragmatics" must then be distinguished from "pragmatism," and "pragmatical" from "pragmatic."

It may have been unwise to introduce the term "pragmatics" into semiotic, and in later writings I have modified slightly the signification of the term to cover the study of the origin, uses, and effects of signs. But in any case my discussion of pragmatics can not be regarded as a misrepresentation of, or an attempted correction of, pragmatism. Pragmatism is a philosophy; pragmatics is a subdivision of the science of signs. I believe that pragmatism has made outstanding contributions to pragmatics, and I wished to suggest this achievement in the terminology of semiotic. But this is not to claim that "pragmatism" is or should be synonymous with "pragmatics."

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